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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/688,961	10/17/2000	ALAIN BETHUNE	107615	1437
25944	7590	01/27/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			PURVIS, SUE A	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 01/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/688,961	<b>Applicant(s)</b> BETHUNE, ALAIN	
	<b>Examiner</b> Sue A. Purvis	<b>Art Unit</b> 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-16,18-22,24-26 and 28-61 is/are pending in the application.
- 4a) Of the above claim(s) 14-16,18-20 and 48-55 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44,45,58 and 59 is/are allowed.
- 6) ☒ Claim(s) 1,3-13,21,22,24-26,28-47,56 and 57 is/are rejected.
- 7) ☒ Claim(s) 11 and 36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-10, 12, 13, 21, 24-26, 29-35, 37-39, 41, 46, 47, 56, 57, 60, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (JP 01-202492) in view of Reed et al. (US Patent No. 4,294,641).

Regarding claims 1, 26, 46, and 47, Doi et al. disclose a method of decorating a substrate comprising the steps of (Translation of Cited Reference 1):

- (1) Supplying a multilayer structure comprising a release sheet (backing), a layer of radiation curable protective resin (varnish), a decorative layer, and a layer of heat activated adhesive;
- (2) Exposing the protective resin layer to radiation to render it partially cured;
- (3) Contacting the multilayer structure with the surface of a target substrate;
- (4) Applying pressure and heat with a heated roller thereby activating the heat activated adhesive layer to bond the decorative and protective resin layers to the target substrate;
- (5) Withdrawing the release sheet; and

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(6) Exposing the transferred layers to further radiation causing the protective resin layer to fully cure whereby the transferred layers remain on the surface of the target substrate.

Doi discloses that the protective resin layer is curable by UV radiation, but does not disclose a UV thermal varnish which is also cured with heat prior to transfer. Instead, Doi shows the varnish layer being partially cured by radiation prior to transfer.

Reed, also drawn to a method of decorating a substrate by the thermal transfer, discloses a method comprising the steps of: (1) Providing a transfer sheet comprising, in order, a support sheet (backing layer), a transfer resin layer (varnish layer) that cures under the effect of radiation, and a design (decoration) layer (column 7, lines 22-40); (2) Bringing the transfer sheet into contact with an article to be decorated (column 9, lines 3-30); (3) Applying localized pressure and heat to the carrier sheet to transfer a localized portion of the resin and design layer to the article (column 9, lines 31-42); (4) Removing the carrier sheet (column 14, lines 45-47); and (5) Causing the resin layer that has been transferred to the article to harden (cure) by exposing it to radiation to thereby produce, an article having a decoration applied thereto (column 14, lines 48-55).

As per claims 1, 4, 26 and 29, Reed discloses that the transfer layer comprises a UV or thermally curable hydroxylated urethane acrylate such as acrylated polyurethane (column 6, lines 5-12; column 14, line 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made that an alternative to the UV varnish used in Doi would be a UV thermal varnish such as the one used in Reed, because one of ordinary skill in the art would appreciate the functionality of using a varnish capable of being cured by either heat or UV radiation. Furthermore, both Doi and Reed are drawn to methods for the thermal transfer decoration of substrate utilizing a transfer sheet having a

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transferable outer protective layer which may be UV cured after transfer to provide a rugged and durable decoration.

As per claims 5, 30, 46, and 47, Reed discloses that the transfer layer includes acrylated polyurethane, a low molecular-weight prepolymer oligomer (column 14, line 21).

As per claims 7 and 32, Reed discloses that the transfer layer may include pigments (column 14, lines 40-44).

As per claims 8 and 33, Reed discloses that the transfer layer includes photo-initiators at a concentration of 2.47 wt% (column 14, lines 22-24).

As per claims 13 and 38, Reed discloses that the design layer is a layer of ink deposited by printing onto the transfer layer prior to the exposure of the transfer layer to UV curing (column 7, lines 28-51). It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the metallic decorative layer of Doi with the printed in decoration layer of Reed, because that such a substitution would enable increase the decorative and aesthetic possibilities of the Doi methodology.

Although Reed discloses that the transfer layer includes photo-initiators at a concentration of 2.47 wt%, they do not specifically disclose, as per claims 21 and 39, that the photo-initiators are present at a concentration by weight of about 0.5%.

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize any effective amount of photo-initiator in compounding the transfer layer of Reed, for use in the method of Doi, because the claimed amount of photo-initiator would have been the result of routine experimentation by one of ordinary skill in the art taking into consideration the polymers utilized and the method and means of UV exposure.

Regarding claims 6 and 31, Doi discloses that the protective resin layer applied to the release sheet contains MEK, a solvent.

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Regarding claims 9 and 34, Doi discloses that the release sheet comprises a polyester film.

Regarding claims 10 and 35, Doi discloses that the decorative layer is covered by a layer of heat activated (hot-melt) adhesive.

Regarding claim 24, Doi discloses that the transferred layers remain coherent as a rugged surface.

Regarding claims 25 and 41, Doi discloses that the substrate may comprise a resin, i.e., a plastic article.

Regarding claims 12, 37, 56, and 57, Doi discloses, as per claims 12 and 37, that the transfer sheet may include a thin layer of metal applied via vacuum to the protective (varnish) layer prior to the steps of transfer and full UV cure ("Effects of the Invention" section). Although Doi discloses in their example that the protective layer undergoes a partial half-cure via UV radiation prior to metallization, it would have been obvious to one of ordinary skill in the art at the time of invention, as per claims 56 and 57, that the protective resin layer of Doi could be vacuum metallized without the exemplified UV half-curing step, because Doi also disclose that the protective layer, after coating and drying (but before half or full cure), is solid in its uncured state ("Protecting Layer" section).

3. Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi in view of Reed as applied to claims 1 and 26 above, and further in view of Hekal et al. (US Patent No. 5,581,978).

Doi in view of Reed, as combined above, discloses that the transfer layer comprises a UV or thermally curable hydroxylated urethane acrylate such as acrylated polyurethane, they do not specifically disclose, as per claims 3 and 28, that the UV or thermally curable resin is based on a cationic system.

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Hekal, also drawn to UV curable coatings, disclose that materials which work well for UV curable overcoatings include acrylated urethane, two part epoxy and urethane systems, and cationic systems (column 5, lines 13-19).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute a UV curable cationic resin for the acrylated polyurethane disclosed by Doi in view of Reed, because such compositions are interchangeable functionally equivalent alternative expedient as suggested by Hekal.

4. Claims 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi in view of Reed as applied to claims 1, 5, 26, and 30 above, and further in view of Howard et al. (US Patent No. 4,133,723).

Although Doi in view of Reed discloses that the transfer layer comprises a low molecular weight oligomer such as UV or thermally curable acrylated polyurethane, they do not specifically disclose, as per claims 22 and 40, that the molecular weights lie in a range from 800 to about 2000.

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize a low molecular weight oligomer such as an acrylated polyurethane having a molecular weight within the claimed range, because Howard, also drawn to radiation curable coatings, discloses that acrylated urethane oligomers having molecular weights ranging from 410 to 1000 (Table I) are useful in forming radiation curable coatings (abstract).

5. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi in view of Reed as applied to claims 1 and 26 above, and further in view of Kamen et al. (US Patent No. 5,391,247) and Davis et al. (US Patent No. 1,124,869).

Doi in view of Reed discloses that the transfer is accomplished by the application of pressure and heat with a heated roller thereby activating the heat activated adhesive layer to bond the decorative and protective resin layers to the target substrate.

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Davis, also drawn to methods for the hot- marking of substrates with a heat-transfer film, discloses that a pattern of decorative material (gold leaf) may be transferred to a substrate through the use of a relief-patterned gilding iron, (Figures 1 and 3; page 1, column 1, line 32 to column 2, line 90).

It would have therefore been obvious to one of ordinary skill in the art at the time of invention to utilize a relief-patterned gilding iron (a stamp), such as that taught by Davis, in place of the heated roller of Doi in view of Reed, because Kamen, also drawn to methods for the hot- marking of substrates with a heat-transfer films, disclose that the transfer film may be compressed against the substrate by means of a stamp, roller or any other suitable instrument known in the art for this purpose (column 3, lines 6-9).

#### ***Allowable Subject Matter***

6. Claims 44, 45, 58, and 59 are allowed.
7. Claims 11 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

8. Applicant's arguments filed 08 November 2005 which refer to the arguments 02 May 2005 have been fully considered but they are not persuasive. The examiner responded to those arguments in the rejection mailed 08 August 2005.



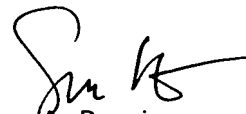
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**Conclusion**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue A. Purvis whose telephone number is (571) 272-1236. The examiner can normally be reached on Monday through Friday 9am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sue A. Purvis  
Primary Examiner  
Art Unit 1734

SP  
January 23, 2006